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CHEMICAL TECHNOLOGY DIVISION

Pilot Plant Section

DECONTAMINATION OF CELLS 6 AND 7, BUILDING 3019, FOLLOWING PLUTONIUM-RELEASE INCIDENT

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ABSTRACT

As a result of the evaporation explosion in the Radiochemical Processing Pilot Plant on Nov. 20, 1959, two cells were contaminated with plutonium to a transferable level of 10^8 d/m/100 sq cm. The area involved measures 40 by 20 by 27 ft high with a total surface area, including equipment, of 10,000 sq ft. The cells were decontaminated by a factor of 1000 in five months by removing loose equipment, debris, and shielding blocks and flushing with 430,600 liters of various decontaminating reagents. The remaining contamination (10^4-10^5 d/m/100 sq cm) was fixed to the surface with three coats of paint. The general beta-gamma radiation background was decreased from 2000 to 30 mr/hr and the long-lived alpha contamination in the air was reduced from 2×10^{-10} to 8×10^{-13} μc/cc. Approximately 141 g of plutonium was flushed from the cell surfaces.

The total direct effort expended was 3000 man-hr including 250 entries into the cell, 175 of which were made in plastic air suits. There were no overexposures from beta-gamma radiation and no detectable increase in the body burden of plutonium of any individual involved.

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